CLAIMS

What is claimed is:

1. A method of reducing collisions in an asynchronous communication system, comprising the steps of:

generating a set of known preamble waveforms, wherein at least one preamble waveform is distinguishable from a remaining set of preamble waveforms among the set of known preamble waveforms; and

transmitting at least one distinguishable preamble waveform among the set of known preamble waveforms based on an association with a call type and a receiver identifier.

2. The method of claim 1, wherein the step of generating comprises the step of forming a set of known, periodic, preamble waveforms using continuous-phase frequency-shift keying, modulated such that the signals toggle between two frequencies.

3. The method of claim 2, wherein the step of generating comprises the step of altering at least one among a frequency spacing, a duty cycle with which the frequencies are toggled, and a code size either dynamically or apriori.

4. The method of claim 1, wherein the method further comprises the step in a receiver of calculating a correlation between a received signal and an undistorted version of a transmitted preamble waveform, for every known preamble waveform within the set.

5. The method of claim 4, wherein the method further comprises the step of rejecting the received signal if a ratio of an undesired-to-desired correlation exceeds a predetermined threshold, for any one of a set of undesired preambles.

6. The method of claim 5, wherein a desired preamble is based on a call type and a receiver identifier associated with the call type.

7. The method of claim 4, wherein the method further comprises the step of computing a measure of envelope variation for a received envelope.

8. The method of claim 7, wherein the method further comprises the step of rejecting the received signal if a normalized correlation metric with a desired preamble signal falls below a predetermined threshold while the received envelope is measured to be substantially constant having minor or no envelope variation.

9. The method of claim 8, wherein the envelope variation is measured as a normalized variance.

10. The method of claim 8, wherein the envelope variation is measured by computing the number of received envelope-squared samples which fall within a region, and wherein the region is formed as a function of an average power of the received samples.

11. A method of reducing collisions in an asynchronous communication system, comprising the steps of:

receiving at least one preamble waveform among a set of different preamble waveforms which toggle between two symbol frequencies, the different preamble waveforms being distinguishable by at least having one among a different symbol frequency spacing and a different symbol toggling duty cycle; and

selecting to decode a preamble waveform among the set of different preamble waveforms based on at least one among the different symbol frequency spacing and the different symbol toggling duty cycle.

12. The method of claim 11, wherein the method further comprises the step of basing a desired preamble waveform on a receiver's call types and identifiers associated with each of the receiver's call types that are available.

13. A wireless transmitter arranged to transmit a preamble signal to wake up specified target receivers, the wireless transmitters comprising:

a signal generator for generating a set of known preamble waveforms including a distinguishable preamble waveform from a remaining set among the set of known preamble waveforms; and

a transmitter apparatus coupled and responsive to the signal generator to transmit at least one among the set of preamble waveforms that is distinguishable based on an association with a call type and a target identifier.

14. The wireless transmitter of claim 13, wherein the signal generator forms a set of known, periodic, preamble waveforms using continuous-phase frequency-shift keying, modulated such that the signals toggle between two frequencies.

15. The wireless transmitter of claim 14, wherein the signal generator can include a signal source that alters the at least one preamble waveform by altering at least one among a frequency spacing, a duty cycle with which the frequencies are toggled, and a code size.

16. The wireless transmitter of claim 13, wherein the call types are selected among a private call, a code call, and a group call.

17. The wireless transmitter of claim 13, wherein the transmitter apparatus transmits at least one among the set of preamble waveforms on a plurality of predetermined carrier frequencies.

18. A wireless transmitter arranged to transmit a preamble signal to wake up specified target receivers, the wireless transmitters comprising:

a signal generator for generating a set of known preamble waveforms;

a signal source that alters at least one of the preamble waveforms in the set of preamble waveforms to provide a distinguishable preamble waveform from a remaining set of preamble waveforms; and

a transmitter apparatus coupled and responsive to the signal source to transmit at least one among the set of preamble waveforms made distinguishable based on an association with a call type and a target identifier.

19. A wireless receiver arranged to detect a preamble signal among a set of known preamble waveforms to exit a standby mode, the wireless receiver comprising:

a receiver for scanning, asynchronously and sequentially during a wakeup time, a plurality of communication resources;

a sampler, coupled to the receiver, for collecting a plurality of received sample sequences, one sample sequence collected at each of the plurality of communication resources; and

a controller coupled to the receiver and sampler, programmed to calculate, for each of the plurality of communication resources, a correlation between a received signal and an undistorted version of a transmitted preamble waveform, for every known preamble waveform within the set.

20. The wireless receiver of claim 19, wherein the controller is further programmed to reject the received signal if a ratio of an undesired-to-desired correlation exceeds a predetermined threshold, for any one of a set of undesired preambles.

21. The wireless receiver of claim 20, wherein a desired preamble signal is based on a call type and a receiver ID associated with the call type.

22. The wireless receiver of claim 19, wherein the controller is further programmed to compute a measure of envelope variation for a received envelope.

23. The wireless receiver of claim 22, wherein the controller is further programmed to reject the received signal if a normalized correlation metric with a desired preamble signal falls below a predetermined threshold while the received envelope is measured to be substantially constant having minor or no envelope variation.

24. The wireless receiver of claim 23, wherein the controller is further programmed to measure the envelope variation as a normalized variance.

25. The wireless receiver of claim 23, wherein the controller is further programmed to measure the envelope variation by computing the number of received envelope-squared samples which fall within a region, and wherein the region is formed as a function of an average power of the received samples.

26. The wireless receiver of claim 19, wherein the plurality of communication resources comprises a plurality of predetermined carrier frequencies.